

WHAT IS CLAIMED IS:

1. A polishing method comprising:

supplying a polishing liquid to an upper portion of a film to be polished to carry out first polishing, the film being provided on a layer having a groove with a predetermined pattern so as to be filled therewith;

5 after the first polishing, polishing the film to carry out clean polishing while supplying one of distilled water and a cleaning liquid thereto; and

10 after the clean polishing, polishing a residual portion of the film remaining outside of the groove by supplying a polishing liquid to carry out second polishing.

2. The polishing method according to claim 1, wherein a process composed of the first polishing, the clean polishing, and the second polishing is CMP.

15 3. The polishing method according to claim 1, wherein the clean polishing is water polishing.

20 4. The polishing method according to claim 1, wherein the first and second polishing and the clean polishing are carried out on the same table.

5. The polishing method according to claim 1, wherein the film is a conductive film.

25 6. A polishing method comprising:

supplying a polishing liquid to an upper portion of a film to be polished to carry out first polishing, the film being provided on a layer having a groove with

a predetermined pattern so as to be filled therewith;

after the first polishing, polishing the film to carry out first clean polishing while supplying distilled water thereto;

5 after the first clean polishing, polishing the film to carry out second clean polishing while supplying a cleaning liquid thereto;

after the second clean polishing, polishing the film to carry out third clean polishing while supplying 10 distilled water thereto; and

after the third clean polishing, polishing a residual portion of the film remaining outside of the groove by supplying a polishing liquid to carry out second polishing.

15 7. The polishing method according to claim 6, wherein a process composed of the first polishing, the first to third clean polishing, and the second polishing is CMP.

20 8. The polishing method according to claim 6, wherein the first and third clean polishing is water polishing.

25 9. The polishing method according to claim 6, wherein the first and second polishing and the first to third clean polishing are carried out on the same table.

10. A method of manufacturing a semiconductor device comprising:

polishing an upper portion of a conductive film by supplying a polishing liquid thereto to carry out first polishing, the conductive film being formed above an insulating film, provided above a semiconductor substrate, having a groove with a predetermined pattern so that the groove is filled with the conductive film;

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after the first polishing, polishing the conductive film to carry out clean polishing while supplying one of distilled water and a cleaning liquid thereto; and

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after the clean polishing, polishing a residual portion of the conductive film remaining outside of the groove by supplying a polishing liquid to carry out second polishing.

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11. The method according to claim 10, wherein a process composed of the first polishing, the clean polishing, and the second polishing is CMP.

12. The method according to claim 10, wherein the clean polishing is water polishing.

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13. The method according to claim 10, wherein the first and second polishing and the clean polishing are carried out on the same table.

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14. The method according to claim 10, wherein the clean polishing includes polishing the conductive film to carry out clean polishing while supplying distilled water at least one of before and after polishing it by supplying the cleaning liquid.

15. The method according to claim 10, further comprising:

cleaning the conductive film by using the distilled water at least one of before and after the  
5 clean polishing.

16. The method according to claim 10, wherein the conductive film is formed via a barrier metal over the insulating film having the groove with the predetermined pattern.

10 17. The method according to claim 10, wherein the conductive film is formed by sputtering and plating.

18. The method according to claim 10, wherein the conductive film is one of Cu, Al, W, and Ag.

15 19. The method according to claim 16, further comprising:

polishing the barrier metal exposed on the insulating film.

20. The method according to claim 17, wherein the clean polishing removes an additive distributed in the upper portion of the conductive film formed by plating.